

2004 Stormwater Management Status Report on the Municipal Separate Storm Sewer System (MS4) for Fairfax County, Virginia

In compliance with the
Authorization to Discharge
under the
Virginia Pollutant Discharge Elimination System
Permit No. VA0088587
and the
Virginia State Water Control Law
Clean Water Act

Report prepared and compiled by:
Stormwater Planning Division (SWPD)
Department of Public Works and Environmental Services (DPWES)
Fairfax County, Virginia
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Foreword

The mission of Fairfax County's Stormwater Management (STW) business area is to develop and maintain comprehensive watershed and infrastructure management programs to protect property, to promote health and safety, to enhance the quality of life, and to preserve and improve the environment for the benefit of the public—"Protecting our land and our water." The STW business area is comprised of the Stormwater Planning Division and the Maintenance and Stormwater Management Division of the Department of Public Works and Environmental Services.

Stormwater regulatory challenges faced by the county include the requirements under the Chesapeake Bay Preservation Ordinance, VPDES/MS4 permitting requirements, state and federal impaired waters listing, nutrient and sediment reduction goals under the Potomac River Tributary Strategy, and state dam regulations. The county also responds to complaints by residents concerning flooding of roads and property.

Some of the problems facing Fairfax County streams include loss of riparian (streamside) vegetation buffers, changes in flow caused by increased impervious surfaces and altered hydrology, and water quality degradation including increased sediment and nutrient loads from polluted runoff. These problems result in stream bank erosion and loss of stability, flooding, and degraded habitat and biological communities.

This report summarizes the efforts of Fairfax County's STW business area and Department of Public Works and Environmental Services (DPWES) as well the county's Department of Health (HD), Fire & Rescue Department (FRD), Department of Planning and Zoning (DPZ); Fairfax County Park Authority (FCPA); Fairfax County Public Schools (FCPS); Northern Virginia Soil and Water Conservation District (NVSWCD), Virginia Department of Forestry (VDOF), Environmental Horticulture Division (EHD) of Fairfax County Extension Service, Northern Virginia Regional Commission (NVRC), and others. These organizations have a common goal of improving water quality through a variety of activities centering on the common theme of improving the environment by mitigating the negative effects to Fairfax County and the Chesapeake Bay of stormwater runoff associated with impervious areas. This report contains details on the accomplishments of the county's comprehensive stormwater management program and the efforts of all the organizations in: 1) Protecting property from damage; 2) Managing the quantity of stormwater runoff; 3) Monitoring and managing the quality of stormwater runoff; and 4) Educating and involving the residents and businesses of the county, not only in environmental friendly ways to deal with stormwater, but in its adverse effects on streams.

Through these accomplishments, the county will achieve the long-term goals of its comprehensive stormwater management program, thereby protecting streams such as the tributary to Difficult Run found on the cover of this report. By improving the integrity of the waterways throughout Fairfax County, we will be simultaneously improving the quality of water flowing into the Occoquan Reservoir and the Potomac River—sources of drinking water for more than one million Fairfax County residents—and then into the Chesapeake Bay.

In January, 2004, Fairfax County was again recognized as a Gold Award recipient by the Chesapeake Bay Program for its innovative stormwater management and watershed planning initiatives. In addition, the National Association of Counties presented Fairfax County with their 2004 Achievement Award for the county's innovative Watershed Management Program.

2004 Stormwater Management Status Report

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Introduction

This report focuses on the state of stormwater management in Fairfax County, of which all efforts support the county's Municipal Separate Storm Sewer System (MS4) operation, retrofit, and maintenance efforts.

Approximately seventeen percent of Fairfax County's land is covered in impervious surfaces, which do not allow water to permeate into the ground, creating stormwater runoff. As the amount of impervious surface increases, so does the amount of stormwater runoff. If the quantity is not properly managed, runoff will cause damage to downstream waterbodies, existing infrastructure, and personal property through significant flooding and erosion. As runoff flows overland it picks up non-point source pollutants including sediment, pesticides, fertilizers, litter, motor oil, and pet waste. These pollutants are then either deposited directly into the county's 980 miles of perennial streams through the storm sewer network or indirectly through stormwater management ponds, where some pollutants have time to settle out of suspension and the stormwater volume is controlled and more slowly released into the streams. Uncontrolled stormwater runoff and non-point source pollution are the leading causes of water quality impairments in Fairfax County's streams.

Fairfax County's waterways drain either to Bull Run and the Occoquan Reservoir or the Potomac River, which are sources of drinking water for over a million Northern Virginia residents. Anything that enters a storm drain is discharged, untreated, into the same waterbodies we use for swimming, fishing, and providing drinking water. Based on results from the 2001 Fairfax County Stream Protection Strategy Baseline Study on the biological and physical conditions of county streams, over 70 percent of the 980 miles of the county's streams are in fair to very poor condition.

Fairfax County Government is responsible for compliance with federal and state regulations regarding water quality, and for providing stormwater management facilities, pipes, and other structures and services within its jurisdiction. The NPDES permit requires the county to maintain a comprehensive stormwater management program. This may entail the retrofit of existing stormwater facilities and the construction of new ones. The NPDES permit also requires erosion and sediment controls at construction sites and maintenance of existing stormwater management facilities. Neither the federal nor the state government provides funding directly for meeting these mandates.

The county is implementing a number of capital improvements and other strategies to mitigate the problems associated with managing stormwater quantity and quality. Watershed management plans are being written and implemented to protect and restore habitats, infrastructure is being maintained, and education and outreach programs are ongoing.

Fairfax County has been a participant in the NPDES Phase I permit program since the early 1990s, having conducted extensive countywide water quality monitoring as part of the Part I and Part II permit application process. The first permit was received in 1997. The reapplication process for an additional five years was conducted in 2001 and a second permit was issued in 2002. The existing permit comes up for renewal in 2007. Over these 10-plus years many positive changes have taken place in the county's comprehensive stormwater management program, which at the onset was primarily focused on water quality monitoring.

The first change, in 1998, was the funding of the Stream Protection Strategy (SPS) Baseline Study, which included 114 principal monitoring sites in 30 watersheds over 400 square miles of land. The study included a detailed assessment of the integrity of the biological communities (benthic macroinvertebrates and fish) and an evaluation of stream features (riparian and in-stream habitats). The county has long recognized the need to protect the living environment of the stream valleys and the SPS study provided

valuable information defining the state of our streams, both biological and physical. Earlier stream evaluation studies had focused solely on erosion, conveyance of water downstream, and flood control.

The next phase was protecting the county's stream valleys—a response to the 2001 State amendments to the Bay regulations, revising the method used to assign Resource Protection Areas (RPA) to water bodies by using perennial flow. Perennial stream identification protocols were developed by the county and approved by the state, and the county embarked on a survey of the headwaters of streams to designate perennial reaches upstream of existing RPAs. The overall length of recognized perennial streams in the County increased from over 600 miles to over 900 miles. These changes were adopted by the Board of Supervisors in November 2003 as amendments to Fairfax County's Chesapeake Bay Preservation Ordinances.

The development of Watershed Management Plans for all 30 watersheds is the next step in the county's watershed planning program. Data from the most recently completed countywide Stream Physical Assessment (SPA) of stream conditions, in combination with the SPS study and other watershed and stream monitoring information, is being used to evaluate the impact of watershed changes on stream quality. The stream assessment includes an evaluation of overall stream habitat and physical conditions and descriptions of features such as stream crossings, stormwater drainage pipes, utility crossings, streambank erosion, deficient buffers, illegal dump sites, and stream obstructions. Citizen input is an important component to each watershed management plan. The county has developed a collaborative public involvement campaign, which involves engaging the community and hosting public meetings to develop solutions to the problems identified as part of the watershed plan development process.

Fairfax County's comprehensive stormwater management program focuses on seven major areas to meet the federal and state regulations and to comply with the county's VPDES Permit 0088587:

- I. Watershed Management Planning
- II. Capital Improvements and Infrastructure Retrofit
- III. Maintenance and Operation
- IV. Strategic Initiatives, Policy, Management, and Emergency Response
- V. Monitoring and Assessment
- VI. Public Outreach and Education
- VII. Additional Permit Reporting Requirements

This report will also satisfy the 2004 annual report requirements of the county's VPDES permit on the Municipal Separate Storm Sewer System (MS4) in Fairfax County, covering the period January 1, 2004 through December 31, 2004, and is the eighth annual report. It was prepared in compliance with the Commonwealth of Virginia's Department of Conservation and Recreation, Virginia Pollutant Discharge Elimination System (VPDES) Permit No. 0088587, section I.C.4, (Appendix A), reissued to Fairfax County on January 24, 2002, for a second five years. The permit is in compliance with the provisions of the Clean Water Act as amended and pursuant to the State Water Control Law and regulations adopted pursuant thereto. The permit authorizes all existing and new stormwater point source discharges to waters of the state from those portions of the MS4 owned or operated by Fairfax County, except as prohibited under Part I.A.1.b of the permit (non-stormwater and stormwater discharges associated with industrial activity and materials from a spill).

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